



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/664,041	09/18/2000	Harris A. Reynolds JR.	09432/130001	5162
22511	7590	03/01/2004	EXAMINER	
ROSENTHAL & OSHA L.L.P. 1221 MCKINNEY AVENUE SUITE 2800 HOUSTON, TX 77010			KOCH, GEORGE R	
			ART UNIT	PAPER NUMBER
			1734	

DATE MAILED: 03/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/664,041

Applicant(s)

REYNOLDS ET AL.

Examiner

George R. Koch III

Art Unit

1734

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 November 2003.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-60 is/are pending in the application.
4a) Of the above claim(s) 10, 11, 14, 16, 25, 26, 28, 29, 33, 39-50, 53 and 54 is/are withdrawn from consideration.
5) ☒ Claim(s) 35, 36 and 51 is/are allowed.
6) ☒ Claim(s) 1-9, 12, 13, 15, 17-24, 27, 30-32, 34, 37, 38, 52 and 55-60 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. It is noted that the amendment filed 11/17/2003 fails to comply with 37 CFR 1.121, as amended on June 30, 2003, which requires that the listing of claims include the text of all claims, including the withdrawn claims. However, in the interest of expediting prosecution, this requirement has been waived. A proper listing of the claims is required with the next response.

Claim Rejections - 35 USC § 102

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 103

3. Claims 1-9, 18-21, 27, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith (US Patent 4,172,562) and McClean (US 4,145,740).

As to claim 1, Smith discloses a winding station, and a conveyor for moving the article.

Smith does not disclose an axial sensor or a controller responsive to the axial sensor.

McClean discloses a winding station (item 2), a conveyor for moving the fiber winder (item 6), sensors for encoding various axial and rotational movements, including an absolute encoder for encoding the axial displacement of the carriage from the article

Art Unit: 1734

(column 4, lines 41-51), and a controller for controlling various linear and rotational movements (see column 6, lines 1-30). While McClean moves the fiber winding system, and Smith moves the article or substrate, one in the art would appreciate that the critical detail is the relative movement between the fiber dispensers (item 3) and the article. Smith discloses reciprocating the mandrel in an axial motion (column 2, lines 29-43). One in the art would appreciate that both systems are known equivalents, with advantages depending on the article being manufactured, and that one would want to move whichever of the article and fiber dispenser is relatively smaller. As pointed out by applicant in paper #9, page 13, lines 1-5, one would pick whichever system is easiest to use because "smaller discrete length articles are easier to move, and thus, may be moved using "movable dispensers" while large articles which are too unwieldy to move would benefit from axial motion".

One in the art would appreciate that the axial sensor and controller of McClean improves winding placement accuracy, ensuring proper placement of the fibers and improving the quality of the final product (see, for example, McClean, column 1, lines 39-49, and column 3, lines 30-45). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized such sensors and control devices of McClean in order to more accurately lay the fibers and improve the quality of the final product.

As to claims 2 and 3, McClean discloses a rotational encoder. By sending out pulses for each rotation, this encoder measures the speed of the rotation as claimed (see column 4, lines 52-63). The controller enables the claimed method of rotation.

As to claim 4, the apparatus of McClean would be capable of the claimed accuracy.

As to claim 5, McClean is capable of the claimed controller adjustments.

As to claim 6, McClean would be capable of being used in the claimed manner.

As to claim 7, the use of integrators in controller functioning is obvious in view of the disclosed incremental counter (item 43). Both structures enable encoding of the sensor input.

As to claim 8 and 9, Smith discloses proximity sensors for use in the monitoring of the axial motion and position of the article (item 43). Smith further discloses as to claim 9, that the sensors can be solenoids, i.e., magnetically based sensors.

As to claims 18-21, and claims 35-36, Smith discloses a resin ring for applying resin to the fibers (column 4, lines 3-11). The resin ring is rotationally fixed in Smith. The inclusion of the dynamic seal which is inflatable is an obvious variation of the fixed resin ring.

As to claim 27 and 30, the axial motion sensor of McClean is capable of performing axial resonance detecting in conjunction with the controller.

4. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Smith (US Patent 4,172,562) and McClean (US 4,145,740) as applied to claim 1 above, and further in view of Ashton (US Patent 3,970,495).

Smith and McClean does not disclose a pressure source to charge the interior of the article.

Art Unit: 1734

Ashton discloses that the mandrel with its sheathing is placed in a mold and inflated with a positive differential fluid pressure to expand the sheathing outwardly into contour conforming contact with the die faces of the mold (column 4, line 61 to column 5, line 2). An inflatable mandrel with a pressure source would allow for ease in removing the mandrel after winding by simply deflating the mandrel. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have used a pressure source and mandrel as in Ashton in order to provide a nondestructive mechanism for removing the mandrel.

5. Claims 12, 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith (US Patent 4,172,562) and McClean (US 4,145,740) as applied to claim 1 above, and further in view of Kornblicher (US 4,359,356).

Smith and McClean do not disclose a brake rotationally coupled to at least on fiber bobbin for maintaining tension.

Kornbichler discloses a brake (items 60 and 61) rotationally coupled to at least on fiber bobbin (items 7a-d), for maintaining tension (column 4, lines 20-30). One in the art would appreciate that maintaining tension in the fibers would prevent misaligned fibers in the winding process. Therefore, it would have been obvious to one of ordinary skill in the art to have utilized a brake and a bobbin in order to improve alignment accuracy.

As to claim 17, Kornblicher discloses a current brake, which is a functional equivalent of a magnetic brake.

6. Claim 13-15, 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith, McClean and Kornbichler as applied to claim 12 above, and further in view of Shinno (US Patent 5,032,211).

The references as applied to claim 12 above do not disclose a torque sensor associated with a motor to rotate the winding station and connected to the controller.

Shinno discloses a tape laying device with a torque sensor associated with a motor to rotate the winding station and connected to the controller. The torque sensor, used in a fiber tape (i.e., fibers presented in tape form) layer apparatus, ensures that the tension is controlled within limits (abstract) for accurate placement (column 2, lines 3-12). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize a torque sensor in order to achieve accurate placement.

As to claims 14 and 15, Shinno discloses a rotational element. A current sensor as claimed in claim 15 is obvious over the rotational sensor of Shinno. Both are functional equivalents of each other.

As to claims 23-25, the torque sensor of Shinno is capable of functioning as the torsional resonance sensor, in combination with the controller.

7. Claims 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith (US Patent 4,172,562) and Kornbichler (US patent 4,359,356).

As to claim 31, Smith discloses a winding station, and a conveyor for moving the article.

Smith does not disclose a brake rotationally coupled to at least on fiber bobbin for maintaining tension.

Kornbichler discloses a winding station (item 2), a conveyor for moving the fiber winder (item 6), and a brake (items 60 and 61) rotationally coupled to at least on fiber bobbin (items 7a-d), for maintaining tension (column 4, lines 20-30).

Kornbichler discloses that the brake improves and applies tension to the fiber strand to control the placement of the fiber (see column 4, lines 41-46). One in the art would appreciate that the brake and additional tension improves the placement of the fiber being wound and the final product quality. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized a brake as in Kornbichler in order to improve fiber winding and the overall product quality.

8. Claims 32-34, and 37-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith and Kornbichler as applied to claim 31 above, and further in view of Shinno.

The references as applied to claim 31 above do not disclose a torque sensor associated with a motor to rotate the winding station and connected to the controller.

As to claims 32-34, Shinno discloses a tape laying device with a torque sensor associated with a motor to rotate the winding station and connected to the controller. The torque sensor, used in a fiber tape (i.e., fibers presented in tape form) layer apparatus, ensures that the tension is controlled within limits (abstract) for accurate placement (column 2, lines 3-12). Therefore, it would have been obvious to one of

Art Unit: 1734

ordinary skill in the art at the time of the invention to utilized a torque sensor in order to achieve accurate placement.

As to claims 37-39, the torque sensor of Shinno is capable of functioning as the torsional resonance sensor, in combination with the controller. Kornbilcher discloses the bobbin. The torque sensor renders the current sensor obvious as both are functional equivalents.

9. Claim 52, 55 is rejected under 35 U.S.C. 103(a) as being unpatentable over Smith, Kornbichler, McClean and Shinno.

As to the claims, Smith discloses a winding station, and a conveyor for moving the article.

Smith does not disclose a brake rotationally coupled to at least on fiber bobbin for maintaining tension.

Kornbichler discloses a winding station (item 2), a conveyor for moving the fiber winder (item 6), and a brake (items 60 and 61) rotationally coupled to at least on fiber bobbin (items 7a-d), for maintaining tension (column 4, lines 20-30).

Kornbichler discloses that the brake improves and applies tension to the fiber strand to control the placement of the fiber (see column 4, lines 41-46). One in the art would appreciate that the brake and additional tension improves the placement of the fiber being wound and the final product quality. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized a brake as in Kornbichler in order to improve fiber winding and the overall product quality.

Art Unit: 1734

Smith does not disclose the claimed sensors.

McClean discloses sensors for encoding various axial and rotational movements, including an absolute encoder for encoding the axial displacement of the carriage from the article (column 4, lines 41-51), and a controller for controlling various linear and rotational movements (see column 6, lines 1-30). McClean discloses a rotational encoder. By sending out pulses for each rotation, this encoder measures the speed of the rotation as claimed (see column 4, lines 52-63). The controller enables the claimed method of rotation, and improves application accuracy. Furthermore, it would have been obvious that such a controller would control the brake. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized the sensors and controllers of McClean in order to achieve accuracy in the application of the fibers.

Smith does not disclose a torque sensor associated with a motor to rotate the winding station and connected to the controller.

Shinno discloses a tape laying device with a torque sensor associated with a motor to rotate the winding station and connected to the controller. The torque sensor, used in a fiber tape (i.e., fibers presented in tape form) layer apparatus, ensures that the tension is controlled within limits (abstract) for accurate placement (column 2, lines 3-12). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize a torque sensor in order to achieve accurate placement. The torque sensor of Shinno is capable of functioning as the torsional resonance sensor, in

Art Unit: 1734

combination with the controller. Kornbilcher discloses the bobbin. The torque sensor renders the current sensor obvious as both are functional equivalents.

Claims 52 and 55 are rejected on similar grounds as claim 51 above, as they comprise all of the limitations disclosed. The axial motion sensor and controller of McClean are capable of functioning as an axial resonance detector.

10. Claim 56-60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith, Kornbichler, McClean and Shinno as applied to claim 51 above, and further in view of Wulker (US Patent 5,942,059).

As to claim 56 and 59, the references as applied to claim 51 above do not disclose a sensor that measures the external diameter of the article upon which a strand is being applied.

Wulker discloses a sensor (item 12) that measures the external diameter of the article upon which a strand (item 4) is being applied. Wulker discloses that the sensor provides feedback which controls the application operation. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized a diameter sensor as in Wulker in order to provide another layer of control preventing the formation of malformed articles.

As to claim 57, McClean as applied to claim 51 above discloses control of the speed of rotation.

As to claim 58, Shinno above as applied discloses tension control.

As to claim 60, Kornbilcher discloses the brake.

Allowable Subject Matter

11. Claims 35-36 and 51 are allowed.
12. The following is a statement of reasons for the indication of allowable subject matter: Applicant's arguments, see page 13, filed 11/17/2003, with respect to claims 35 and 36 have been fully considered and are persuasive. While the prior art does suggest winding stations, conveyors and resin rings generically which have chambers, resin inlets and formed surfaces, the prior art does not suggest a resin ring with a chamber sealed by an inflatable seal disposed where the fibers enter and leave the chamber.

Response to Arguments

13. Applicant's arguments, see page 13, filed 11/17/2003, with respect to claims 35, 36, and 51 have been fully considered and are persuasive. The rejection of claims 35 and 36 has been withdrawn.
14. Applicant's arguments filed 11/17/2003 have been fully considered but they are not persuasive with regard to claims 1-9, 12, 13, 15, 17-24, 27, 30-32, 34, 37, 38, 51, 52, and 55-60.
15. In response to applicant's argument on pages 11-12 that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the capability to manufacture long lengths of tubing, the need for

Art Unit: 1734

tracks, etc) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

16. Furthermore the rejection of claim 22 is maintained as the remarks on pages 13-14 are based on issues discussed in pages 11-12.

17. In response to applicant's argument on pages 14-15 (with regard to claims 12 and 17) that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the selectively operable brake having the ability to adjust the mechanical properties such as tensile strength) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

18. Furthermore the rejections of claim 13-15 and 23-25 are maintained as the remarks on pages 15 are based on issues discussed in pages 11-12.

19. Furthermore the rejection of claim 31 is maintained as the remarks on pages 15-16 are based on issues discussed in pages 11-12.

20. In response to applicant's argument on pages 16-17 (with regard to claims 32-34 and 37-39) that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., that the sensor is to be used in a variable tension environment) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are

not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

21. Furthermore, the rejection of 52 and 56-60 is maintained, as it does not require the inflatable seal of claim 51. The sections dealing solely with claim 51 (i.e., the inflatable seal) have been deleted. The rejection of claim 52 is maintained as the remarks on pages 17-18 are based on issues discussed in pages 11-12.

Conclusion

22. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to George R. Koch III whose telephone number is (571) 272-1230 (TDD only). If the applicant cannot make a direct TDD-to-TDD call, the

Art Unit: 1734

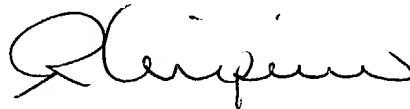
applicant can communicate by calling the Federal Relay Service at 1-800-877-8339 and giving the operator the above TDD number. The examiner can normally be reached on M-Th 10-7.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (571) 272-1226. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



George R. Koch III
February 21, 2004



RICHARD CRISPINO
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700